CLAIMS

What is claimed is:

1. A method comprising:

receiving data from a number of interfaces;

switching the data through a first switch fabric upon determining that the data is being processed as packet data, wherein switching the data through the first switch fabric includes:

de-encapsulating a first number of protocol headers from the packet data; and

encapsulating the packet data with a second number of protocol headers;

switching the data through a second switch fabric upon determining that the data is being processed as Time Division Multiplexing (TDM) traffic.

2. The method of claim 1, wherein switching the data through the first switch fabric further comprises mapping TDM traffic into packet data.

3. The method of claim 1, further comprising concatenating the packet data into a TDM signal, wherein the concatenation can be across any locations within the TDM signal and wherein a size of the concatenation can be in increments of single TDM frames.

4. A method comprising:

receiving data from a first Time Division Multiplexing (TDM) signal through a number of first interfaces

switching the data through a packet mesh upon determining that the data is being processed as packets, wherein switching the data through the packet mesh includes:

de-encapsulating a first number of protocol headers from the packets; and

encapsulating the packets with a second number of protocol headers;

switching the data through a TDM switch fabric upon determining that the data is being processed as Time Division Multiplexing (TDM) traffic; and

transmitting the packets and the TDM traffic into a second TDM signal through a number of second interfaces, wherein the transmitting includes concatenating the packets into the second TDM signal such that the concatenation can be across any location within the second TDM signal and wherein a size of the concatenation can be in increments of single TDM frames.

5. The method of claim 4, wherein the second TDM signal is transmitted to an in-ring network element.

6. The method of claim 4, wherein the packets are concatenated within locations in the second TDM signal not occupied by TDM traffic.

7. A network element comprising:

a first line card having a number of first interfaces, the number of first interfaces to receive data;

a second line card having a number of second interfaces;

a first switch fabric coupling the first line card to the second line card;

a control card;

a second switch fabric coupling the control card to the first line card and the second line card, the first line card to switch the data through a first switch fabric upon determining that the data is being processed as packets, the first line card to switch the data through the second switch fabric upon determining that the data is being processed as Time Division Multiplexing (TDM) traffic.

8. The network element of claim 7, wherein the number of first interfaces receive data from a TDM signal.

9. The network element of claim 7, wherein the number of second interfaces is to transmit TDM traffic and packets out from the network element through a TDM signal.

10. The network element of claim 7, wherein the first line card includes ingress packet processing circuitry, the ingress packet processing circuitry to de-encapsulate a first number of protocol headers from the packets based on configuration data and fields within the first number of protocol headers.

11. The network element of claim 10, wherein the ingress packet processing circuitry is to encapsulate the packet data with a second number of protocol headers based on the configuration data and the fields within the first number of protocol headers and the second number of protocol headers.

12. The network element of claim 7, wherein the second line card includes physical connection circuitry, the physical connection circuitry to concatenate the packet data into a TDM signal upon determining that the packet data is transmitted to an in-ring network element, wherein the concatenation can be across any locations within the TDM signal and wherein a size of the concatenation can be in increments of single TDM frames.

13. A network element comprising:

a first line card having a number of first interfaces, the number of first interfaces to receive data, the first line card including:

a first physical connection circuitry coupled to the number of first interfaces;

a first ingress packet processing circuitry coupled to the first physical connection circuitry; and

a first egress packet processing circuitry coupled to the first physical connection circuitry and the first ingress packet processing circuitry;

a second line card having a number of second interfaces;

a second physical connection circuitry coupled to the number of second interfaces;

a second ingress packet processing circuitry coupled to the second physical connection circuitry; and

a second egress packet processing circuitry coupled to the second physical connection circuitry and the second ingress packet processing circuitry;

a packet mesh coupling the first ingress packet processing circuitry to the second egress packet processing circuitry;

a control card, the control card including a Time Division Multiplexing (TDM) switching circuitry;

a TDM switch fabric coupling the TDM switching circuitry to the first physical connection circuitry and the second physical connection circuitry, the first physical connection circuitry to switch the data through a packet mesh upon determining that the data is being processed as packets, the first physical connection circuitry to switch the data through the TDM switch fabric upon determining that the data is being processed as Time Division Multiplexing (TDM) traffic.

14. The network element of claim 13, wherein configuration data received from the control card determines whether the first ingress packet processing circuitry or the second egress packet processing circuitry de-encapsulates a first number of protocol headers from the packets and encapsulates the packets with a second number of protocol headers.

15. The network element of claim 14, wherein the first ingress packet processing circuitry and the second ingress packet processing circuitry is to de-encapsulate the first number of protocol headers and encapsulate the second number of protocol headers based a field within the first number of protocol headers and the second number of protocol headers.

16. The network element of claim 13, wherein the second physical connection circuitry is to concatenate the packets into a TDM signal upon determining that the packets is transmitted to an in-ring network element, wherein the concatenation can be across any locations within the TDM signal and wherein a size of the concatenation can be in increments of single TDM frames.

17. A machine-readable medium that provides instructions, which when executed by a machine, cause said machine to perform operations comprising:

receiving data from a number of interfaces;

switching the data through a first switch fabric upon determining that the data is being processed as packet data, wherein switching the data through the first switch fabric includes:

de-encapsulating a first number of protocol headers from the packet data; and

encapsulating the packet data with a second number of protocol headers;

switching the data through a second switch fabric upon determining that the data is being processed as Time Division Multiplexing (TDM) traffic.

18. The machine-readable medium of claim 17, wherein switching the data through the first switch fabric further comprises mapping TDM traffic into packet data.

19. The machine-readable medium of claim 17, further comprising concatenating the packet data into a TDM signal, wherein the concatenation can be across any locations within the TDM signal and wherein a size of the concatenation can be in increments of single TDM frames.

20. A machine-readable medium that provides instructions, which when executed by a machine, cause said machine to perform operations comprising:

receiving data from a first Time Division Multiplexing (TDM) signal through a number of first interfaces

switching the data through a packet mesh upon determining that the data is being processed as packets, wherein switching the data through the packet mesh includes:

de-encapsulating a first number of protocol headers from the packets; and

encapsulating the packets with a second number of protocol headers;

switching the data through a TDM switch fabric upon determining that the data is being processed as Time Division Multiplexing (TDM) traffic; and

transmitting the packets and the TDM traffic into a second TDM signal through a number of second interfaces, wherein the transmitting includes concatenating the packets into the second TDM signal such that the concatenation can be across any location within the second TDM signal and wherein a size of the concatenation can be in increments of single TDM frames.

1 21. The machine-readable medium of claim 20, wherein the second TDM signal is
2 transmitted to an in-ring network element.

1 22 The machine-readable medium of claim 20, wherein the packets are concatenated
2 within locations in the second TDM signal not occupied by TDM traffic.